

### **Amendments to the Specification:**

Please replace the paragraph beginning at page 1, line 15 with the following amended paragraph:

Differences in computer system hardware can vary the appearance of test items presented to the test taker. Hardware factors include display screen resolution and display screen size. Variations may also arise when test content is presented in different operating system environments. A test taker working on a ~~Maeintosh~~ MACINTOSH<sup>®</sup> computer, for example, may be disadvantaged against a test taker working on a ~~Windows~~ WINDOWS<sup>®</sup>-based machine. Because of variations in the operating software, a test designed for presentation in a ~~Windows~~ WINDOWS<sup>®</sup> environment may appear differently and therefore be less readily comprehensible when presented on a ~~Maeintosh~~ MACINTOSH<sup>®</sup> machine.

Please replace the paragraph beginning at page 6, line 7 with the following amended paragraph:

As shown in Fig. 1, a test item 20 is presented in a test window 31. A portion of the test window 31 is occupied by a test item panel 32. At least a portion of a test item 20 is visible through the test item panel 32. The test item panel 32 may include a scroll bar 33 on the side of the ~~window panel~~. The scroll bar may be used to scroll through the test item ~~window panel~~ 32 to view the rest of the test item 20.

Please replace the paragraph beginning at page 6, line 12 with the following amended paragraph:

Referring now to Figs. 2 and 3, the test item 20 is displayed on a first display device 26 (Fig. 2) having a first resolution or a second display device 28 (Fig. 3) having a second resolution. Resolution for a display device is a measure of how much information can be displayed at one time on the device. For a cathode ray tube (CRT) computer monitor, resolution is measured in pixels (horizontal x vertical). Where a resolution is described as larger or higher herein, it is meant that the resolution has a larger value for either the horizontal or vertical measurement. A higher resolution allows more information to fit on a screen. Each test has a minimum resolution, referred to here as the target resolution, at which it may be displayed. The resolution of each test panel is equal to the target resolution.

Please replace the paragraph beginning at page 6, line 27 with the following amended paragraph:



In the example illustrated in Figs. 2 and 3, ~~the test item 20 is designed for display on a device with a target resolution equal to the resolution of display device 26 of Fig. 2. the target resolution has been set to be equal to the resolution of display device 26 of Fig. 2. The target resolution is the display device resolution where a specific~~ Therefore, a test item panel 32 will occupy all available space in a test item window 31 so as to fill the entire screen. ~~For example, test item 20 has a target resolution equal to the display resolution of display device 26 of Fig. 2. As a result, the test item 20 occupies the entire display area 27 of the display device 26.~~ The display device 28 of Fig. 3 has a larger resolution for both the horizontal and vertical values, so the test item window panel 32 does not fill the entire display area 29 in either direction. In this example, the display device ~~28~~ 26 of Fig. 2 may have a resolution of 640x480 while the larger display device ~~26~~ 28 of Fig. 3 may have a resolution of 800x600.

Please replace the paragraph beginning at page 7, line 8 with the following amended paragraph:

When a test item is presented on display devices having different resolutions and/or display viewing areas, the same number of pixels may be used to display the test items on each display. Referring to Fig. 2, a test item 20 is presented in (i.e. visible through) a test ~~window 31~~ panel 32 on the first display device 26 with a display area 27 and a first display resolution. Fig. 3 shows a test item presented in a test ~~window 31~~ panel 32 on a second display device 28 having a larger display area 29 and a higher screen resolution. Despite the fact that the second display device has a larger viewing area and larger screen resolution than the first display device, the test item panel 32 will have the same dimensions in pixels. In other words, the same amount of test item panel 32 space is used to display the test item 20.

Please replace the paragraph beginning at page 7, line 21 with the following amended paragraph:

Other test items will require scrolling to view portions of the test item. For example, the test items shown in Figs. 1, 6, 7, and 8 require scrolling to see a hidden bottom portion of the test item. One typical scrolling device is the scroll bar 33 shown in Figs. 1, 6, 7, and 8. When a test item requires scrolling, the same amount of scrolling may be required for various display configurations regardless of the resolution of the displays because the same number of pixels is visible through the test item panel and the same number of pixels are is used to display the image within the test item panel across all display configurations. In contrast, when test content is



presented in a character-based text format, a higher resolution display typically fits more characters in the viewing area, so that less scrolling is required on a higher resolution display than on a lower resolution display, unless special scaling steps are taken.

Please replace the paragraph beginning at page 10, line 6 with the following amended paragraph:

Some response controls may appear differently on different display devices or operating systems, but still achieve a consistent manner of appearance of the overall test item. For example, radio buttons have a different appearance on ~~Windows~~ WINDOWS® operating systems and ~~Macintosh~~ MACINTOSH® operating systems. Despite small variations in response control appearance or other factors, the image-based display system provides consistency in the most important test item appearance factors, such as text-wrapping, alignment, and amount of scrolling.

Please replace the paragraph beginning at page 13, line 6 with the following amended paragraph:

To administer a test, one or more test items are presented sequentially to a respondent at a workstation, as indicated in step 200 in Fig. 9. The test items 20 are presented in a test item ~~window panel~~ 32, as shown in Figs. 1-3 and 6-8. Because the test content is stored in an image format, test questions will be presented uniformly on a variety of computer system configurations, despite variations in hardware such as the user interface.

Please replace the paragraph beginning at page 13, line 12 with the following amended paragraph:

The administration of computerized testing typically involves providing a user terminal or workstation such as a personal computer for presenting the computerized test to a test taker. A user terminal is also the typical and preferred device used for authoring test content and/or capturing the test item image. The user terminal may be a personal computer such as an IBM®, Compaq COMPAQ®, Dell DELL®, or Apple APPLE® ~~Macintosh~~ MACINTOSH® personal computer. The user terminal typically has resident thereon an operating system such as ~~Windows~~ WINDOWS® 95[[®]], ~~Windows~~ WINDOWS® 98[[®]], ~~Windows~~ WINDOWS® ME[[®]], ~~Windows~~ WINDOWS NT®, ~~Windows~~ WINDOWS® 2000[[®]], ~~Mac OS 7~~ MAC OS® 7, ~~Mac OS 8~~ MAC OS® 8, ~~Mac OS 9~~ MAC OS® 9 or ~~Mac OS X~~ MAC OS® X software.



Please replace the paragraph beginning at page 14, line 9 with the following amended paragraph:

Standardized testing may be conducted in a network environment. In a client/server system, each user is provided with a user terminal that may be linked to a modem, communication lines, network lines, a central processor, and databases. A ~~[[n]] NT~~ WINDOWS NT<sup>®</sup> server or ~~UNIX~~ UNIX<sup>®</sup> server, for example, may be used with this system. The user terminal provides the user with a way to view electronic test items stored on the server. The user terminal also provides a way to input responses to test items. The responses may be electronically transmitted to the central server.

Please replace the paragraph beginning at page 14, line 16 with the following amended paragraph:

The network also typically has a resident operating system, for example, ~~Novell~~ NOVELL<sup>®</sup> Netware NETWARE<sup>®</sup> or ~~Novell~~ NOVELL<sup>®</sup> Intranetware INTRANETWARE<sup>®</sup>, among other possibilities. In the preferred environment, the desktop typically has Internet browser software, such as ~~MS~~ MICROSOFT<sup>®</sup> Internet Explorer<sup>™</sup> or ~~Netseape Navigator~~ NETSCAPE NAVIGATOR<sup>®</sup>. In the alternative, the network software operating system may not be available separate from the workstation operating system, and the network operating system may have an integrated Internet browser. Other alternatives for client and server software include ~~Oracle~~ ORACLE<sup>®</sup> software or ~~Microsoft~~ MICROSOFT<sup>®</sup> SQL Server<sup>™</sup>.

Please replace the paragraph beginning at page 15, line 14 with the following amended paragraph:

The method of the present system typically affords greater flexibility to test authors because any symbol that is available to the author normally can be represented as an image. For example, some authoring tools such as ~~Microsoft~~ MICROSOFT<sup>®</sup> WORD<sup>™</sup> software support tools for easily building formulas. Any equation or formula will be captured in image format exactly as it is built in the authoring tool. Therefore, math equations, formulas and special symbols may be used regardless of the delivery system or the examinee's system. Figs. 2 and 3, for example, use a square root symbol. Other examples include use of the Pi symbol on a math test or the ¿ symbol on a Spanish language test.



Please replace the paragraph beginning at page 16, line 5 with the following amended paragraph:

Another potential advantage of the image capture method of the present system concerns window scrolling. When the item content is captured and presented as a test item image, it is possible to control the amount of screen space occupied by the test item and the amount of window scrolling required to view the entire test item. By specifying the exact dimensions of the display ~~window~~ panel in pixels, the delivery system can ensure that all examinees can see the same amount of content and must perform the same amount of scrolling to view the entire test item.